REMARKS

By this amendment, claim 30 has been amended, and claims 42-47 have been added. Thus, claims 15-47 are now active in the application. Reexamination and reconsideration of the application is respectfully requested.

Initially, Applicants wish to thank the Examiner for his acknowledgments set forth in items 2 and 3 on page 2 of the Office Action, as well as for his indication of the withdrawal of rejections as presented in items 4-8 on pages 2 and 3 of the Office Action.

The Examiner's objection to claim 30, set forth in item 10 at the bottom of page 3 of the Office Action, is also noted. In order to obviate this objection, claim 30 has been amended to change "noncombustible joint member are disposed" to --noncombustible joint member is disposed--, as kindly suggested by the Examiner.

Next, in items 11-14 on pages 4-15 of the Office Action, the Examiner has presented prior art rejections against all of the claims 15-42. In particular, in item 11 on pages 4-10 of the Office Action, cliams 15, 18-27 and 31-36 were rejected under 35 U.S.C. 103(a) as being unpatentable over Parrott et al. (GB 2 241 466) in view of Berdan, II (U.S. 6,042,911) and further in view of Clarke (U.S. 3,846,202); in item 12, on pages 10 and 11 of the Office Action, claims 16, 17 and 40 were rejected under 35 U.S.C. 103(a) as being unpatentable over Parrott et al. in view of Berdan, II and in further view of Clark, and in further view of Yamaguchi et al. (U.S. 4,224,103); in item 13 on pages 11-14 of the Office Action, claims 28-30, 37, 38, 41 and 42 were rejected under 35 U.S.C. 103(a) as being unpatentable over Parrott et al. in view of Berdan, II and in further view of Clarke, and in further view of Hinden et al. (U.S. 4,861,631); and in item 14 on pages 14 and 15 of the Office Action, claim 39 was rejected under 35 U.S.C. 103(a) as being unpatentable over Parrott et al. in view of Berdan, II, in view of Clarke, in further view of Hinden et al., and in further view of Yamaguchi et al..

These rejections are respectfully traversed for the following reasons, and it is respectfully requested that the rejections be withdrawn.

With exemplary reference to the drawing figures, independent claim 15 sets forth a noncombustible insulating duct comprising: an elongated strip 1 formed of an insulating material 2 and a noncombustible sheet 3, wherein the noncombustible sheet 3 is disposed continuously about a circumference of the insulating material 2 so as to completely encase the insulating material 2 when viewed in longitudinal cross section; wherein the elongated strip 1 is arranged in a spiral shape having a plurality of turns (see Figs. 1 and 4); wherein adjacent turns of the plurality of turns of the spiral shape are secured together by a bonding agent 7 so as to form a tubular duct; and wherein the tubular duct is noncombustible.

Independent claim 22 is identical to independent claim 15 with the exception that, instead of requiring the adjacent turns of the plurality of turns to be secured together by the bonding agent 7, requires the adjacent turns of the plurality of turns to be secured together "by a noncombustible joint member" 5.

Independent claim 31 is identical to claims 15 and 22, with the exception that it requires the adjacent turns of the plurality of turns of the spiral shape to be secured together by both a bonding agent 7 and a noncombustible joint member 5 so as to form a tubular duct.

In the rejection of these independent claims 15, 22 and 31, the Examiner cites, as the primary reference, the Parrott et al. reference (GB 2 241 466). The Examiner points out that the Parrott et al. reference teaches a noncombustible insulating duct comprising panels 5 of sheet material 7 secured together by a bonding agent, wherein the sheet material comprises mineral wool sheets "encased" by noncombustible steel sheets 9.

However, as the Examiner correctly points out, the Parrott et al. reference fails to teach that the noncombustible steel sheet 9 is disposed continuously about a circumference of the insulating material 7 so as to completely encase the insulating material 7 when viewed in longitudinal cross section, "and that the sheet material is in the form of an elongated strip that is arranged in a spiral shape having a plurality of turns wherein adjacent turns of the plurality of turns are secured together so as to form a tubular duct."

Although not pointed out by the Examiner, it should also be noted that the Parrott et al. reference discloses the panels 5 (formed of the mineral wool insulating sheets 7 and the noncombustible steel sheets 9) only in a flat structural form in which they are secured together to form rectangular ducts, with the specific utilization of corner sections 11 that form channels for receipt of the panels 5 to form the rectangular ductwork (see, for example, page 2, lines 6-16). The panels 5 are sufficiently rigid to maintain their structural form as illustrated in the figures.

In the paragraph spanning the bottom of page 4 and the top of page 5 of the Office Action, the Examiner next addressed the claim recitation regarding the noncombustible sheet being disposed continuously about a circumference of the insulating material so as to completely encase the insulating material, by referring to another section of the Parrott et al. reference, as well as to the Berdan, II (i.e. the Berdan reference, hereinafter). That is, regarding this limitation, the Examiner refers to the showing in Fig. 5 of Parrott et al. and the description at the last five lines of page 8 wherein Parrott et al. shows that two noncombustible sheets 9 are "bent twice each at perpendicular angles to encase a mineral wool core" 17. The Examiner then goes on to refer to the Berdan reference's disclosure of an insulation assembly that comprises "a mineral fiber wool insulating material that is mechanically shaped into a batt having a rectangular cross sectional shape and an exterior facing (12) that is securred to the batt (10) and that overlies the entire batt perimeter to facilitate the ease of installing and handling of the insulation assembly."

Regarding the reference to the Parrott et al. teaching illustrated in Fig. 5 and described at the last five lines of page 8, it is submitted that this teaching provides no suggestion whatsoever to dispose a noncombustible sheet continuously about a circumference of an insulating material so as to completely encase the insulating material when viewed in longitudinal cross section, as recited in each of the independent claims 15, 22 and 31. Rather, the illustration in Fig. 5 of Parrott et al. is that of a jointing member 17 for joining two sections of rectangular ductwork (see Fig. 1). The jointing member 17 is constituted by a mineral wool sheet 7 having its left and right ends (as viewed in Fig. 5) inserted into channels formed by sheet metal pieces 9 that extend inwardly toward one another beyond the ends of the opposing panels 5. There is no teaching or

suggestion whatsoever in this portion of the Parrott et al. reference of completely encasing an insulating material, and certainly no teaching of completely encasing an elongated strip of insulating material when viewed in cross section (i.e. when viewed in a longitudinal cross section when formed into a tubular coil as illustrated in present Figs. 1 and 4).

Regarding the Berdan reference teaching, the purpose of the exterior layer 12 of Berdan is to loosely encapsulate the batt so that the insulation assembly 1 can be re-shaped into a shape defined by the user (see column 4, lines 1-6) (e.g., to fit the insulation assembly between joists of non-standard dimensions). As such, the exterior layer 12 is preferably formed of polyethylene (see column 4, lines 12-13). A person having ordinary skilled in the art would clearly not have been motivated to use such flexible exterior layer to fully encapsulate the solid (non-flexible) mineral wool sheets 7 of the Parrott reference. Furthermore, Berdan teaches using a material (polyethylene) that is flexible and does not teach the use of a non-combustible exterior material.

The Examiner states that the purpose of the Berdan teaching of completely encasing the batt material is "in order to facilitate the ease of installing and handling of the insulation assembly.", as described at column 1, lines 24-27. However, the exterior layer 12 of Berdan is used in the Berdan insulation assembly due to the fact that the interior insulating material itself is very flexible and conformable and thus must have an exterior "skin" to contain it. The same is not true of the Parrott insulating sheets 7, as evidenced by Fig. 5 of Parrott which shows a joint portion 17 bridging between duct sections 5, 5 (see also Fig. 1). Thus, as shown by the non-clad center section of the mineral wool sheets 7 in Fig. 5 of Parrott, the cladding 9 is not essential for the structural stability of the insulating assembly in Parrott, quite contrary to Berdan. Therefore, the purpose for which Berdan requires the exterior layer 12 (of flexible polyethylene) is inapplicable to the relatively rigid mineral wool sheets 7 of Parrott.

Therefore, the teaching of Berdan to use an exterior layer 12, although teaching the ordinary artisan to provide a flexible exterior layer to a comformable batt material 10, clearly would not have motivated a person of ordinary skill in the art to completely encase the relatively rigid mineral wool sheets 7 of Parrott et al.

In the paragraph beginning near the middle of page 5 of the Office Action, the Examiner cites the Clarke patent for disclosing a tubular ventilation duct formed of spirally wound tape, with a bonding agent adhesively securing side portions of adjacent turns together. From this disclosure of Clarke, the Examiner concludes that "one of ordinary skill in the art would have recognized to have formed the sheet material taught by Parrott et al. and Berdan, II into an elongated strip of sufficient length so as to spirally wind the elongated strip into a tubular duct having a plurality of turns wherein adjacent turns of the plurality of turns are secured together by a bonding agent as Clarke teaches that it is well known to form a tubular ventilation duct formed of a spirally wound elongated strip of ventilation material."

However, first, Clarke teaches a process that requires a "thin flexible tape material" 23 (see column 3, lines 2 and 3) that is supported in a tubular shape by a wire coil 16 that is bonded to the flexible tape material by a vinyl wear strip material 37 that is bonded to the flexible material 23 (see especially Fig. 3). The process of Clarke clearly is not adapted for manufacturing a tube from the mineral wool sheets 7 of Parrott et al. clad with sheet metal 9, for numerous reasons. Most importantly, the Parrott et al. sheets are relatively rigid sheets, as evidenced by their structural form in Figs. 1-5 of Parrott et al., and thus would not adapt to the necessary flexing (e.g. unrolling from wheel 22 and rolling into the shape of the tubular duct, as illustrated in Figs. 1, 2 and 4 of Clarke). Further, the bulky nature of the completely encased mineral wool sheets of Parrott et al. would not adapt to the requirement of the Clarke process for a "thin flexible tape material" 23 (column 3, lines 2-3).

Also, stepping back to look at the Examiner's overall proposed combination of Parrott et al., Berdan, and Clarke, it seems quite clear that a person having ordinary skilled in the art would not have found it obvious to start with the rectangular ductwork of Parrott that is formed of separate mineral wool sheets 7 clad with sheet metal 9 to form panels 5, wherein the separate panels 5 are secured together using angle brackets formed by specially-formed corner sections 11, and then modify such ductwork to result in a spirally-coiled tubular duct having the mineral

wool sheets fully encased by the sheet metal 9 of Parrott (apparently in view of Berdan) but somehow made flexible and spirally-coiled into a tubular duct (in view of Clarke).

Rather, it is submitted that the only way to arrive at the combination proposed by the Examiner is through the use of impermissible hindsight to choose individual features from among different references, using the claims of the present application as a blueprint to combine such features in a way that would clearly would not have been suggested by the references to a person having ordinary skilled in the art, but is rather only suggested by the Applicant's own disclosure and claims. See, e.g., Grain Processing Corp. v. American Maize-Products Co., 5 USPQ2d 1788, 1792 (Fed. Cir. 1988).

With reference to the paragraph at the middle of page 6 of the Office Action, regarding claims 22 and 31 that recite that adjacent turns of the plurality of turns of the spiral shape are secured together by a noncombustible joint member 5 so as to form a tubular duct, the Examiner states that the Parrott et al. reference teaches that "panels (item 5) of the sheet material are connected via jointing strip (item 17, noncombustible jointing member as claimed by Applicant)", and concludes (on page 8 of the Office Action) that "one of ordinary skilled in the art would have recognized to have formed the sheet material taught by Parrott et al. and Berdan, II into an elongated strip of sufficient length so as to spirally wind the elongated strip into a tubular duct having a plurality of turns wherein each pair of adjacent turns of the plurality of turns are secured together by the noncombustible joint member of Parrott et al. in addition (in the case of claim 31), or as an alternative (in the claim 22), to the bonding agent of Parrott et al."

However, the jointing member 17 of Parrott et al. (Figs. 1 and 5) is simply a mineral wool sheet panel 7 inserted into channels formed on opposing ends of two panels 5 by a sheet metal cladding 9 that projects beyond the ends of the duct panels 5. It is not seen, nor does any reference suggest, how this type of simple lateral bridge-type joint could be adapted to be provided between each adjacent pair of turns of a spirally-coiled tube. Further, even if such joint could be envisioned, the adaptation of the formation of such a joint into the process of forming

the tubing taught by Clarke would not be readily discernable to a person of ordinary skill in the art.

For the above reasons, it is believed clear that a person having ordinary skill in the art would not have been motivated to modify the Parrott et al. rectangular ductwork arrangement in view of the Berdan and Clarke patents, or to make any combination of the references of record in such a manner as to result in or otherwise render obvious the present invention as recited in any of the independent claims 15, 22 and 31. Therefore, it is respectfully submitted that claims 15, 22 and 31, as well as the claims depending therefrom, are clearly allowable over the prior art of record.

Next, the dependent claims set forth additional features of the present invention and further define the invention over the prior art. For example, claims 28 and 37 specify that the noncombustible joint member 5 has opposing side edges that are folded-over the axially extending portion of the flanges of the adjacent turns of the elongated strip. In item 13 on pages 11-14 of the Office Action, the Examiner cited the Hinden et al. patent for its use of a flexible connector material having marginal edges 19 that are clamped within recesses 21 formed by the bent marginal edges 16 of the strips 13, 14. The Examiner takes the position that the combination of the flexible connector material and the bent marginal edges 16 corresponds to the noncombustible joint member as claimed, and that the bent marginal edges 16 constitute the "opposing side edges" of the noncombustible joint member as claimed that are folded over the strips 13, 14 of Hinden et al., which correspond to the axially extending portions of the flanges as claimed.

However, Hinden clearly does <u>not</u> disclose or suggest <u>a</u> noncombustible joint member having <u>opposing side edges</u> that are folded over respective axially extending portions of a strip member, but rather discloses the use of two separate joint members that each have a bent-over marginal edge 16 that clamps one of the opposing edges of a flexible insulating connector (17, 18, 22). Further, Hinden clearly does not suggest how such joint member could be incorporated

into a tubular duct wherein it acts as a joint between adjacent turns of the spiral material forming the duct.

Furthermore, new dependent claims 43 and 46 require the bonding agent 7 to be disposed longitudinally between adjacent turns of the tubular duct, as illustrated in Figs. 1 and 4. In contrast, even the bonding agent that secures the adjacent turns of the Clarke tubing together is not disposed longitudinally between adjacent turns, but is rather disposed radially between adjacent turns, since the adjacent turns are overlapped with one another in order for the bonding agent to be disposed therebetween (see Fig. 3).

The Yamaguchi et al. patent was cited by the Examiner for disclosing "a noncombustible bonding agent for noncombustible organic fibers," but this reference clearly provides no teaching or suggestion that would have obviated the above-mentioned shortcomings of the Parrot et al., Berdan and Clarke references.

In view of the foregoing amendments and remarks, it is respectfully submitted that the present application is clearly in condition for allowance. An early notice thereof is earnestly solicited.

If, after reviewing this Amendment, the Examiner feels there are any issues remaining which must be resolved before the application can be passed to issue, it is respectfully requested that the Examiner contact the undersigned by telephone in order to resolve such issues.

Respectfully submitted,

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